Patent Application of

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For

TITLE: ILLUMINATED ORNAMENTAL PURSE

CROSS-REFERENCE TO RELATED APPLICATIONS Not Applicable

FEDERALLY SPONSORED RESEARCH Not Applicable

SEQUENCE LISTING OR PROGRAM Not Applicable

BACKGROUND OF THE INVENTION – FIELD OF THE INVENTION

This invention relates to plastic handbags, specifically to a flexible vinyl handbag that illuminates on its entire exterior surface for an appealing visual effect.

BACKGROUND OF THE INVENTION - PRIOR ART

Of the many designs for purses, a number include the ability to illuminate by electric light, either on the interior, the exterior, or occasionally both. Of the purses that can illuminate in this way, some are composed of a translucent or semi-translucent plastic that

creates an unusual visual effect and can facilitate viewing of the purse's contents. Prior art related to the illumination of purses includes a number of examples.

US 6,585,390 to Stone, et al, proposes a purse of transparent or semi-transparent material that uses a cable-like electroluminescent light source to illuminate the interior of the purse and radiate light waves exteriorly. While this approach uses a transparent material for the structure of the purse, the illumination occurs only from light passing from the electroluminescent cable from the interior to the exterior surface of the purse, rather than illuminating the structure by refracting light from within the structure material itself. By creating light with an electroluminescent cable, the illumination around the purse structure is less bright than using a refractory method and creates a fundamentally different visual effect. The visual effect of the Stone patent is more akin to glowing wires as seen through a window rather than the outer surface of an entire pane of glass glowing brightly at night. Furthermore, using electroluminescent cable requires inverting DC current to AC, thus more electrical output from a battery pack and more heavy batteries than a compact light emitting diode (LED) illumination unit. Multiple batteries require more space inside the purse and create more dead weight for the person carrying the purse.

US 6,585,390 to Stone also proposes a design composed of rigid polymers, such as Plexiglas, rather than a softer, more pliable and flexible polymer material that is more pleasing to touch and more comfortable to wear close to the body. Additionally, US 6,585,390 proposes a construction of rigid polymer panels into a metal frame of extruded aluminum and a lid structure attached by a hinge, all of which require costly manual fabrication.

US 5,067,063 to Granneman proposes using an electroluminescent panel mounted into the side of a purse, primarily for interior illumination. Yet this electroluminescent panel comprises only a portion of the exterior surface, not the entire exterior surface, and electroluminescence is a fundamentally different method of illuminating a flexible material than internal refraction of light through a structure material from an LED illumination unit. Internal refraction occurs when an illumination unit is inserted into the surface of a translucent or semi-translucent substrate, allowing the light to illuminate the material completely and evenly. An electroluminescent lamp is a thin laminated light-emitting

capacitor that typically requires an inverter from direct to alternating current, not an LED powered by direct current from a battery. US 5,067,063 also stipulates a permanently mounted battery and a removable light source rather than a unified battery and illumination unit that is removable from the structure of the purse. Though a purse structure composed entirely of electroluminescent panels is conceivable (while not claimed in the Granneman patent), such a design would be prohibitively costly and complex to assemble, power and protect from wear and tear.

US 6,499,857 to Lumley proposes the installation of a plurality of individual lights and gem-like members on the exterior surface of a purse. This approach may provide a pleasing visual effect, but does not illuminate the entire exterior surface of the purse using the material from which the body of the purse is made. Instead, only small lights or gem-like members attached to the outer surface are illuminated, with the rest of the purse remaining un-illuminated. This partial illumination issue is similar to that of the Granneman patent.

US 6,132,059 to Leibowitz proposes a satchel with an electroluminescent exterior display and display holder. While this design provides illumination to a portion of the exterior of the satchel, it does not illuminate the entire exterior surface.

US 5,567,054 to Dalgleish proposes an illuminated bag with a chemiluminescent wand that can be activated to light a portion of the external surface. Chemiluminescence is a fundamentally different illumination technology from an LED and has different visual effect in relation to any polymer container to which it is connected. This effect is one of a bar of light in or on a bag rather than a completely illuminated purse structure.

There are several other patents related to interior illumination of purses, such as US 5,908,232 to Burns, US 5,444,605 to Rivera and US 6,447,142 to Weir, that use incandescent bulbs instead of LED-driven refraction and have no provision for external, decorative illumination.

In summary, there are neither patents nor prior art known by this applicant that combine complete exterior illumination, an LED light source and a refractory method of illumination.

BACKGROUND OF THE INVENTION – OBJECTS AND ADVANTAGES

There are several objects and advantages to the proposed purse:

1. To provide a purse which can illuminate and glow across its entire exterior surface, not just in discrete places, nor solely in individual panels, nor with individual lights or gem-like members attached to the exterior surface.
2. To provide a purse which illuminates with great brilliance over its entire exterior surface by using a light refraction method of "pumping" light into the purse structure material itself rather than shining light across or through its surface.
3. To provide a purse that uses a compact LED illumination unit to supply the needed illumination and refraction, saving battery energy, storage space, and weight.
4. To provide a purse that uses an LED illumination unit capable of pulses of light (a "strobe" effect), which greatly enhances the visual effect of the illumination and the attractiveness of the purse.
5. To provide a purse with an LED illumination unit available a plurality of different colors and which can be modularly removed and installed by the wearer in order to change the illuminated color of the purse structure.
6. To provide a purse that is manufactured with a flexible polymer, such as vinyl Plastisol, which is soft and compliant to touch, yet which retains a semi-rigid shape from its original manufacturing mold.
7. To provide a purse that is manufactured using a widely known technique called "dip molding," which simplifies the design to eliminate mechanical hinges and other hardware that require costly manual assembly.
8. To provide a purse whose vinyl Plastisol structure is highly resistant to scratches, cracks and general wear, preserving the purse's appearance and durability.
9. To provide a purse that uses the same refractory illumination method in its flexible polymer shoulder strap or carrying handle as in its shell structure, thereby increasing the purse's visual appeal and attention to the wearer.
10. To provide a purse with an LED illumination unit that can be easily attached to or removed from the interior of the purse with a hook-and-loop fastener.

11. To provide a purse that uses one or more die-cut slits in the purse structure to permit access to its contents when it is manually bent, folded or compressed by the wearer (eliminating mechanical closures from the manufacturing process).

Still further objects and advantages will become apparent from the consideration of the ensuring description and drawings.

SUMMARY

In accordance with the present invention a purse that has a structure that illuminates on its entire exterior surface, with a structure composed of a flexible polymer (plastisol).

DRAWINGS – FIGURES

In the drawings, related figures have the same number but different alphabetic suffixes.

Figures 1A and 1B show the purse in closed and open positions, respectively.

Figure 2 shows a close-up view of the LED illumination unit, attached to the interior of the shell structure of the purse.

Figure 3 shows a close-up view of the "accordion" fold of flexible material that is part of the structure of the purse.

Figure 4 shows a close-up view of the connection between handle and purse shell structure.

Figure 5 shows a close-up view of an alternative LED unit that can illuminate the shell structure and the handle in different colors.

Figures 6-9 show additional embodiments of the purse,

DRAWINGS – Reference Numerals

10. structure of purse
12. dimple in structure of purse for LED illumination
20. accordion fold
30. purse structure LED illumination unit
32. purse structure LED bulb
34. purse structure LED illumination unit on/off switch
36. purse structure LED illumination unit hook-and-loop fastener
38. light rays produced by LED illumination unit
40. handle
42. alternative LED illumination unit
44. alternative LED illumination unit on/off switch
45. alternative LED illumination unit function switch
46A. alternative LED illumination unit bulb – first color
46B. alternative LED illumination unit bulb – second color
48. dimple in handle of purse for LED illumination

50. access slit

60a. hook material of hook-and-loop fastener

60b. loop material of hook-and-loop fastener

70. integral hinge

DETAILED DESCRIPTION – FIGS. 1A, 1B, 2, 3, and 4 – PREFERRED EMBODIMENT

A preferred embodiment of the purse of the present invention is illustrated in Figure 1A. The shell structure of the purse **10** is made from a translucent plastisol vinyl that holds its shape after molding but can be flexibly bent, opened and closed without losing its strength or subtle rigidity. The plastisol vinyl that composes the shell structure is typically used in molded "bellows" for automobile gear shift levers or grips on hand tools such as pliers. The structure of the purse is made with a manufacturing process called "dip-molding." In this process, a heated metal mandrel in the shape of a purse is dipped into a container of liquid vinyl plastisol, allowed to cure for a measured period of time, removed from the liquid vinyl plastisol, then the molded purse structure is removed from the mandrel with compressed air.

Figure 1B shows accordion fold **20,** LED illumination unit **30** and handles **40**. The accordion fold **20** is molded as an integral part of the shell structure of the purse. LED illumination unit **30** and handle **40** are added to the shell structure after the dip molding process.

Figure 2 shows a close-up view of an LED illumination unit **30**. The LED illumination unit is a compact battery-powered unit composed of one LED bulb **32**, and a switch **34** for turning the bulb(s) on and off from its internal battery. In the preferred embodiment, this invention proposes the use of a product identified as an LED Pocket Flashlight, which is marketed under the trademark of the Photon Micro Light, USD 375,372, manufactured by LRI, Inc, P.O. Box 58, Blachly, OR 97412-9718. This product has a single LED bulb and can be used individually or in combination with additional units to achieve the desired illumination effect.

The LED illumination unit **30** is connected to the shell structure of the purse **10** by a hook-and-loop fastener **36**, which attaches to the structure of the purse and the LED illumination unit by its adhesive backing. The LED illumination unit is attached to the structure of the purse in such a way that LED bulb **32** slips into a dimple **12** that is molded into the structure of the purse when it is dip-molded.

Figure 3 shows a close-up view of the "accordion" fold **20** of flexible vinyl that is molded as an integral part of the purse's shell structure.

Figure 4 shows a close-up view of the connection between the shell structure **10** and the handle **40.**

Operation of Preferred Embodiment -- Figures 1B, 2, 3 and 4

Figure 1B shows the purse in the open position, where the flexible nature of the plastisol vinyl enables the structure to open and close along the bottom edge without a traditional mechanical hinge.

When the purse is opened in Figure 1B, integral "accordion" folds **20** of the shell structure are visible on the sides. These folds of material open and close flexibly with the shell structure and are designed to prevent small items such as coins or keys from falling out the sides of the purse when it is opened. The accordion folds are molded as a part of the shell structure of the purse, eliminating any extra assembly time after the initial dip-molding process. Along with the rest of the purse structure, the accordion folds illuminate when the LED illumination unit is activated.

Figure 2 shows a close-up view of the LED illumination unit **30**. When the LED illumination unit is switched on from switch **34**, light from the LED bulb **32** shines into the dimple **12**, "pumping" light into the translucent vinyl plastisol material, causing it to glow evenly with light across its entire exterior and interior surfaces of the purse structure. This "internal refraction" illumination effect is akin to holding a flashlight against the bottom of a frosted drinking water glass. As the light shines up from the bottom and through the glass structure, the glass appears to be illuminated.

Ideally, the wall thickness of the vinyl plastisol for the shell structure should be between 5-6 millimeters (.200" to .250"), allowing for a deep dimple into which to "pump" the light from the LED. This material thickness also allows for a purse structure that is resilient over time, retaining its original structure even in hot atmospheric conditions.

When the owner of the purse is done using it, she can use the LED illumination unit switch **34** to turn off the light. If she desires to illuminate the purse in a different color, she can interchangeably remove the LED illumination unit **30** from its hook-and-loop attachment **36** and install a separate LED illumination unit having a different color LED bulb. This interchangeability of LED illumination units expands the range of colors available to the owner, adding to the novelty and attractiveness of the purse.

Figure 3 shows a close-up view of the accordion folds **20** that open and close flexibly with the shell structure **10**.

Figure 4 shows a close-up view of the connection between the purse shell structure **10** and the handle **40**. Light communicates from the shell structure into the handle material through a clear adhesive bond between the handle and shell structure. This light continues to travel through the handle material, illuminating it for additional visual appeal.

Alternative Embodiments -- Figures 5 – 9

Several variations upon the core design embodiment cited above are possible. Generally, the variations fall into three categories: shape of the structure of the purse, various types of handles/carrying straps and methods of illumination.

Variations of the purse include, but are not limited to:

1. Figure 5, which shows an alternative LED illumination unit
2. Figure 6, which shows a cylindrical design
3. Figure 7, which shows a spherical design
4. Figure 8, which shows a "teardrop" design
5. Figure 9, which shows a flat, round design

Figure 5 shows a custom-designed LED illumination unit with a plurality of LED bulbs that would permit the simultaneous illumination of both the purse shell structure and its handle in different colors.

Figure 6 shows a cylindrical purse design with an LED illumination unit for the shell structure of the purse but no LED illumination unit for the handles.

In the spherical embodiment shown in Figure 7, the purse has an alternative LED lighting unit **42**, with one bulb to illuminate the shell structure in a first color and one bulb to illuminate the handle in a second color. This alternative LED illumination unit has an on/off switch and a switch that controls the illumination functions for the unit. As cited above in the preferred embodiment section, LED bulbs are available in a plurality of colors. These colors include, but not limited to blue, red, orange, yellow, green, turquoise, white and violet. In addition, advanced versions of the LED lighting units are available that pulse light in a "strobe" pattern.

Figure 8 shows a 'teardrop" design with a single LED illumination unit for the shell structure and the handle.

Figure 9 shows a flat, round design with a pattern of an opaque material applied to the exterior surface.

Operation of Alternative Embodiments – Figures 5-9

Figure 5 shows a custom-designed alternative LED illumination unit with a plurality of bulbs that would permit the simultaneous illumination of both the purse shell structure and its handle. Operation of this special LED illumination unit is similar to the single-color LED illumination unit. The unit **42** has an on/off switch **44**, which operates a pair of LED bulbs **46A** and **46B**. Each bulb illuminates in a different color when the unit is switched on. By manufacturing the handle or shoulder strap from a flexible translucent vinyl and connecting one end of the material to an LED illumination unit, the same internal refraction method of illumination occurs as cited above. The unit **42** also has a function switch **45**, which controls the unit's lighting modes of constant or pulsed, "strobe" illumination.

Figure 6 shows a cylindrical design with a single-color LED illumination unit installed and no illumination for the handles. This simplification of the design maintains illumination for the purse shell structure, but expands the options of handles that can be used.

Figure 7 shows a spherical design with an alternative LED unit installed. An owner of this purse can turn the unit on with a single switch to illuminate both the shell structure and

the handle simultaneously. The owner can also move the function switch to a plurality of positions that pulse the light in a "strobe" effect in both the shell structure and the handle.

Figures 8 and 9 show Alternate Embodiments of shape and design, though each has the single LED bulb illumination unit specified in the Preferred Embodiment for the sake of simplicity. The owner of the purses shown in the Additional Embodiments in Figures 8-9 operate the LED lighting unit **30** by switching the LED lighting unit on/off switch **34**, shown in Figure 2. Owners who wish to remove an LED lighting unit from a purse, may do so by detaching the unit from its hook-and-loop fastener **36**. Upon removal, the LED illumination unit can be replaced with another unit that illuminates a different color. Owners of a plurality of LED illumination units can install units of different colors for a pleasing visual effect (a red unit to go with a red outfit or a one blue unit for a blue outfit, for example).

Conclusion, Ramifications and Scope

There are multiple advantages of the present invention:

a. The process of illuminating the shell structure of the purse with the "internal refraction" method cited above creates a complete illumination of the entire exterior surface of the product, maximizing the brilliance of light it emits, creating a novel visual effect and attracting maximum attention to the wearer.

   This internal refraction method is fundamentally different from all other methods of illuminating the exterior surface of a purse, as the shell structure material of the purse itself illuminates from light "pumped" into it. Other methods in patents cited above are limited to:

   i. Illuminating "gems" applied to the exterior
   ii. Illuminating the interior and/or limited areas of the exterior with incandescent lights
   iii. Lighting an electroluminescent cable that shines through panels of rigid translucent plastic
   iv. Attaching electroluminescent panels to the exterior or interior of a purse
   v. Using a chemiluminescent wand to light part of the exterior of a bag.

None of these methods have the same degree of brilliant, all-encompassing illumination possible with LED-driven internal refraction of the shell purse structure. Additional ramifications include the following advantages:

a. The LED illumination units employed in this illumination process are compact and lightweight, saving interior space for storage of personal articles while minimizing the overall weight of the purse. While style and attractiveness are important to a purse design, lightweight and practical functionality are equally valuable.

b. LEDs are a vastly more energy-efficient source of illumination than conventional incandescent bulbs, electroluminescent panels or electroluminescent cable. This energy efficiency boosts battery life and decreases the need for space-consuming, heavy sets of larger batteries.

c. Using an LED illumination unit that is available in a plurality of different colors and which can be modularly removed and installed by the wearer lowers the cost of having purses to match different outfits or occasions. Instead of buying two or three purses, the wearer only needs to buy one purse, and can accessorize her purchase with multiple LED lighting units.

d. Using an LED illumination unit capable of pulses of light (a "strobe" effect), greatly enhances the visual effect of the illumination and the attractiveness of the purse.

e. Molding the shell structure of the purse with a flexible vinyl plastisol increases the comfort of using the product, as it is softer to touch, complies more easily to the shape of a body, and is more durable than rigid designs made of brittle acrylic plastic.

f. The "dip-molding" process used with vinyl plastisols dramatically reduces the cost of manufacturing and simplifies designs, often enabling purses to be made in a one-piece "clamshell" shape. This simplification also reduces time to market for new models, lowers tooling costs, and lowers production costs when compared with products made from multiple parts.

Although the description above contains many specific details, these should not be construed as limiting the scope of the invention but as merely providing illustration of the some of its preferred embodiments. For example, the purse can have other shapes, such as cylindrical, spherical, "teardrop," tetrahedral, etc. It can have additional colors via the interchangeable LED illumination units. And it can have different styles of carrying handles or straps, which also can be illuminated in colors independent of those used on the shell structure of the purse.

Thus the scope of the invention should be determined by the appended claims and their legal equivalents, rather than solely by the examples given.